

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 10/575,259

Attorney Docket No.: Q94302

AMENDMENTS TO THE DRAWINGS

Figures 1 and 2 labeled “PRIOR ART”.

Attachment: 1 Replacement Sheet

REMARKS

Dealing with preliminary matters first, Applicant thanks the Examiner for acknowledging Applicant's claim to priority and receipt of the priority document. Further, it is noted with appreciation that the Examiner has considered the references cited in the Information Disclosure Statement concurrently filed with the application.

Drawings:

The Examiner has objected to Figures 1 and 2 for not being labeled "PRIOR ART".

Attached to this Amendment are Figures 1 and 2 labeled "PRIOR ART".

Claim Rejections Under 35 U.S.C. § 103:

Claims 1-6 are all the claims pending in the application.

The Examiner rejected claims 1 and 6 under 35 U.S.C. §103(a) as being unpatentable over Endo et al. (U.S. Patent No. 5,732,790) in view of Fecht (EP386439), and rejected claims 2-5 under 35 U.S.C. § 103(a) as being unpatentable over Endo et al., as modified by Fecht, in further view of Tachiiri (U.S. Patent Publication No. 2003/0070885).

Claim 1 recites:

An electric power steering apparatus for assisting steering of a steering shaft by the rotation power of an electric motor through a reducer based on the steering torque detected by a torque sensor, wherein:

a rotary potentiometer is disposed in the reducer,

a portion of a swing arm of the potentiometer is engaged with a swirl groove formed on the side of a worm wheel in the reducer as well as the swing arm is swingingly rotated according to the rotation of the worm wheel to thereby detect the rotation angle of the steering shaft,

the swirl groove is formed to detect the three revolutions of the steering wheel in correspondence to the range from lock to lock of a steering wheel, and

the rotation angle is detected by an absolute angle in the entire range from lock to lock of the steering wheel.

Applicants respectfully submit that there is no teaching or suggestion in Endo, Fecht or Tachiiri regarding the requirement of claim 1 that "the swirl groove is formed to detect the three revolutions of the steering wheel in correspondence to the range from lock to lock of a steering wheel" or "the rotation angle is detected by an absolute angle in the entire range from lock to lock of the steering wheel". Support for these features can be found in paragraph [0044] and Fig. 6 of the published application.

With the electric power steering apparatus of the claimed invention, a trianglewave output is not caused like before because the swirl groove that is the to-be detected part of the potentiometer has been installed so that the swing rotation angle of the swing arm and the rotation angle of the steering shaft are proportional. Therefore, the invention allows for the accurate detection of the rotation angle of the steering shaft with low-cost, because it is unnecessary to discriminate the same two or more values.

Accordingly, it is submitted that claim 1 and its dependent claims patentably distinguish over the prior art.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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